

STIC-Biotech/Ch mLib

CRFE

36755 Text

me.j

From: Chan, Christina
Sent: Wednesday, February 28, 2001 4:22 PM
To: Minnifield, Nita; STIC-Biotech/ChemLib
Subject: RE: rush search
Importance: High

Please ~~rush~~ Thanks Chris

Chris Chan
TC 1600 New Hire Training Coordinator and SPE, 1644
CM 1, Room 9B19
308-3973



-----Original Message-----

From: Minnifield, Nita
Sent: Wednesday, February 28, 2001 4:05 PM
To: Chan, Christina
Subject: rush search

Christina,
Please approve, overdue 2 month amdt.

STIC:

09/196161 09/196,161

Please do commercial sequence search on SEQ ID NO. 1, 3-10 (aa sequences; each 105 aa or less)

Please do text search:
inventor names (Yoke Min Sin; Toong Jin Lam; Zhiyuan Gong)
Filing date 9/28/98
title Recombinant vaccine against infectious disease in fish
terms vaccine, fish (goldfish, mirror carp, channel catfish, tilapia, rainbow trout, ornamental fish), ciliated ectoparasitic protozoan, immobilization antigen repeat
Ichthyophthiriasis; Ichthyophthirius multifiliis, white spot disease, 48 kd antigen epitopes of I. multifiliis antigen

Paper copy of all results please
Thanks

Exr. N. M. Minnifield
AU 1645
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Mailbox CM1-8E12
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15574
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1

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Scientific and Technical Information Center

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: _____

Inventors (please provide full names): _____

Earliest Priority Filing Date: _____

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

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AA Sequence (#) 8
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File 155:MEDLINE(R) 1966-2000/Dec W4
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File 5:Biosis Previews(R) 1969-2001/Mar W1
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(c) 2001 DECHEMA
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File 351:Derwent WPI 1963-2001/UD,UM &UP=200113
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?ds

Set	Items	Description
S1	2227426	VACCIN? OR IMMUNIZ? OR IMMUNIS? OR ANTIBOD? OR IMMUNOGLOBU- LIN? OR EPITOPE? ?
S2	549607	FISH? OR GOLDFISH? OR (MIRROR()CARP? ?) OR (CHANNEL()CATFI- SH? ?) OR TILAPIA OR (RAINBOW()TROUT? ?) OR (ORNAMENTAL()FISH- ?)
S3	161	(WHITE(3N)SPOT(3N) DISEASE? ?) OR ICHTHYOPHTHIRIASIS
S4	456	ICHTHYOPHTHIRIUS OR MULTIFILIIS
S5	355	AU=SIN Y? OR AU=SIN, Y?
S6	1606	AU=LAM T? OR AU=LAM, T?
S7	1233	AU=GONG Z? OR AU=GONG, Z?
S8	36	S1 (5N) (S3 OR S4)
S9	25	RD S8 (unique items)
S10	3158	S5-S7
S11	11	S10 AND (S3 OR S4)
S12	9	RD S11 (unique items)
S13	30	S9 OR S12

?t 13/7/all

13/7/1 (Item 1 from file: 155)

DIALOG(R)File 155:MEDLINE(R)

(c) format only 2000 Dialog Corporation. All rts. reserv.

10163844 99455331

Partial cross protection against Ichthyophthirius multifiliis in
Gyrodactylus derjavini immunized rainbow trout.

Buchmann K; Lindenstrom T; Sigh J

Department of Veterinary Microbiology, Royal Veterinary and Agricultural
University, Frederiksberg, Denmark. kurt.buchmann@vetmi.kvl.dk

Journal of helminthology (ENGLAND) Sep 1999, 73 (3) p189-95, ISSN
0022-149X Journal Code: IBR

Languages: ENGLISH

Document type: JOURNAL ARTICLE

Partial cross protection against a skin-parasitic ciliate has been
recorded in rainbow trout previously immunized with an ectoparasitic
platyhelminth. The susceptibility to infection by Ichthyophthirius
multifiliis differed significantly between naive and Gyrodactylus derjavini
immunized rainbow trout. Fish partly immune to the ectoparasitic monogenean
G. derjavini became less infected and experienced lower mortality than
naive fish when exposed to I. multifiliis infections. In vitro studies on
immobilization of theronts using de complemented (heat-inactivated) serum
from G. derjavini immune or non-immune hosts showed no immobilization.

However, untreated serum from both immune and non-immune fish containing intact complement immobilized theronts (titre 128-256). In addition, non-specific priming of the host response with interleukin (IL-1), bacterial lipopolysaccharide (LPS), concanavalin A (Con A) or mannan did confer a partial resistance to *I. multifiliis* infection. This will suggest that non-specific factors including complement could be partly responsible for the host response against infections with this ciliate.

13/7/2 (Item 2 from file: 155)
DIALOG(R) File 155:MEDLINE(R)
(c) format only 2000 Dialog Corporation. All rts. reserv.

10005012 99329828
Ichthyophthiriasis in carp *Cyprinus carpio*: infectivity of trophonts prematurely exiting both the immune and non-immune host.
Wahli T; Matthews RA
Centre for Fish and Wildlife Health, University of Berne, Switzerland.
thomas.wahli@itpa.unibe.ch
Diseases of aquatic organisms (GERMANY) May 31 1999, 36 (3) p201-7,
ISSN 0177-5103 Journal Code: C4V
Languages: ENGLISH
Document type: JOURNAL ARTICLE

Ichthyophthirius multifiliis exposed to naturally immunised carp established short-term infections, the majority of parasites actively emerging within 2 h of entering the epidermis. A small, but significant, number of these expelled parasites were shown to retain theront-like properties with the capacity to directly re-invade a further fish host. Infectivity fell rapidly with time in the host and was comparable to that of trophonts of a similar age artificially induced to emerge from non-immune hosts with the aid of MEM (minimal essential medium). Trophonts recovered with MEM from immune carp 2 to 8 h post infection rarely established infections upon exposure to susceptible new hosts and no infections resulted from older trophonts recovered after 8 to 24 h exposure; older trophonts, however, represented only a small percentage of the original parasite population. A low level of infectivity was recorded in trophonts collected with the aid of MEM from non-immune carp after up to 24 h of infection. The results are discussed in relation to theront transformation and evasion of the host immune response.

13/7/3 (Item 3 from file: 155)
DIALOG(R) File 155:MEDLINE(R)
(c) format only 2000 Dialog Corporation. All rts. reserv.

09846404 99113356
Ichthyophthirius multifiliis: a model of cutaneous infection and immunity in fishes.
Dickerson H; Clark T
Department of Medical Microbiology and Parasitology, College of Veterinary Medicine, University of Georgia, Athens, USA.
hwd@calc.vet.uga.edu
Immunological reviews (DENMARK) Dec 1998, 166 p377-84, ISSN 0105-2896
Journal Code: GG4
Languages: ENGLISH
Document type: JOURNAL ARTICLE; REVIEW; REVIEW, TUTORIAL
The parasitic ciliate *Ichthyophthirius multifiliis* offers a useful system

for the study of cutaneous immunity against an infectious microorganism. Naive fish usually die following infection, but animals surviving sublethal parasite exposure become resistant to subsequent challenge. This resistance correlates with the presence of humoral antibodies in the sera and cutaneous mucus of immune fish. A mechanism of immunity has recently been elucidated that involves antibody binding to surface proteins (referred to as immobilization antigens or i-antigens) located on the parasite cell and ciliary membranes. Antibody-mediated cross-linking of i-antigens triggers a response by the parasite resulting in its exit from the host. These effects can be observed directly on the surface of live fish. In addition to allowing the observation of effector responses in vivo, *Ichthyophthirius* also provides a means to study the ontogeny of the mucosal immune response. The sites of antigen capture and presentation, and the sites of antibody production, are unknown with regard to cutaneous immunity. Because the external epithelial surfaces of fish are often the points of pathogen entry, a basic understanding of the inductive immune mechanisms and immune cell interactions in the skin and gills is extremely important with regard to vaccine development. The development of *Ichthyophthirius* as an experimental system and how it might be used to address these issues are discussed in this review. (62 Refs.)

13/7/4 (Item 4 from file: 155)
DIALOG(R) File 155:MEDLINE(R)
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08806277 97047684

Passive immunization of channel catfish (*Ictalurus punctatus*) against the ciliated protozoan parasite *Ichthyophthirius multifiliis* by use of murine monoclonal antibodies.

Lin TL; Clark TG; Dickerson H
Department of Medical Microbiology, College of Veterinary Medicine,
University of Georgia, Athens 30602, USA.

Infection and immunity (UNITED STATES) Oct 1996, 64 (10) p4085-90,
ISSN 0019-9567 Journal Code: GO7

Languages: ENGLISH

Document type: JOURNAL ARTICLE

Fish acquire immunity against the ciliated protozoan parasite *Ichthyophthirius multifiliis* following sublethal infection. The immune response includes the elaboration of humoral antibodies against a class of abundant surface membrane proteins referred to as immobilization antigens (i-antigens). Antibodies against these proteins immobilize the parasite in vitro, suggesting a potential role for the i-antigens in protective immunity. To test this hypothesis, passive immunization experiments were carried out with naive channel catfish, *Ictalurus punctatus*, using immobilizing murine monoclonal antibodies (MAbs). Fish were completely protected against lethal challenge following intraperitoneal injection of 20 to 200 micrograms of MAb. Although fish succumbed to infection at lower doses, palliative effects were observed with as little as 2 micrograms of antibody. In experiments in which animals were challenged at various times following inoculation, an inverse relationship between parasite load and serum immobilizing activity was seen. Of seven MAbs which conferred protection, all were immunoglobulin G class antibodies. The only immobilizing MAb that failed to protect was an immunoglobulin M antibody that was absent from surface mucosa as determined by enzyme-linked immunosorbent assay. The implications of these findings for the development of a vaccine against *I. multifiliis* and immunity against surface

pathogens of fish are discussed.

13/7/5 (Item 5 from file: 155)
DIALOG(R) File 155:MEDLINE(R)
(c) format only 2000 Dialog Corporation. All rts. reserv.

07714018 94120694
Localized leucocyte response to Ichthyophthirius multifiliis establishment in immune carp *Cyprinus carpio* L.
Cross ML; Matthews RA
Department of Biological Sciences, University of Plymouth, UK.
Veterinary immunology and immunopathology (NETHERLANDS) Oct 1993, 38
(3-4) p341-58, ISSN 0165-2427 Journal Code: XCB
Languages: ENGLISH
Document type: JOURNAL ARTICLE
O-group carp (*Cyprinus carpio*) which had been immunized against *Ichthyophthirius multifiliis* by controlled infections were challenged by topical application of theronts to the caudal fin. The parasites which established were examined ultrastructurally, and host leucocyte responses were compared with those observed in primary infections. In the primary exposure group eosinophils and (to a lesser extent) basophils were the predominant cells infiltrating infection sites. In contrast, parasite development in immunized fish initiated localized leucocytic infiltrations which were dominated by eosinophilic granular cells (EGCs) and basophils. Greater localized phagocytosis was recorded in immunized fish by neutrophils, macrophages and resident epidermal filament cells. In vitro studies indicated that pronephric leucocytes from immunized fish displayed enhanced non-specific phagocytosis. In the skin, leucocytes were observed in close proximity to the trophozoite surface in both immunized and primary exposure fish, often undergoing lysis and release of cellular contents. However, there was no evidence of active cell adherence nor of any cell-mediated damage incurred to the parasite in either case. These observations are discussed in relation to the possible role of leucocytes in mediating pathogenesis and immune responses.

13/7/6 (Item 6 from file: 155)
DIALOG(R) File 155:MEDLINE(R)
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05815196 87074352
Production and preliminary characterization of murine monoclonal antibodies to *Ichthyophthirius multifiliis*, a protozoan parasite of fish.
Dickerson HW; Evans DL; Gratzek JB
American journal of veterinary research (UNITED STATES) Nov 1986, 47
(11) p2400-4, ISSN 0002-9645 Journal Code: 40C
Languages: ENGLISH
Document type: JOURNAL ARTICLE
An initial panel of 34 hybridomas, each secreting antibodies reactive with an infective theront stage of an *Ichthyophthirius multifiliis* isolate, was produced. Three of these cell lines, each producing immunoglobulin M class antibodies, were cloned by limiting dilution and were expanded as ascites-producing tumors in syngeneic mice. Three monoclonal antibodies (MAB) reacted with intact whole theronts in an enzyme-linked immunosorbent assay to dilutions of 1:10,000 in ascitic fluids and had a similar pattern

of surface and cytoplasmic staining in indirect immunofluorescent tests. Only antigen specified by MAB E6 could be characterized by acrylamide gel electrophoresis and immunoblotting; initial data indicated a molecular weight of 200,000. Physicochemical properties of the determinants recognized by the 3 MAB were tested by pronase digestion and periodate oxidation. Seemingly, a protein, glycoprotein, and carbohydrate were recognized by MAB E6, FE10, and AC8, respectively.

13/7/7 (Item 1 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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11296708 BIOSIS NO.: 199800078040
Protection of goldfish against *Ichthyophthirius multifiliis* by immunization with a recombinant vaccine.
AUTHOR: He Jiangyan; Yin Zhan; Xu Guoliang; Gond Zhiyuan; Lam Toong Jin ; Sin Yoke Min (a
AUTHOR ADDRESS: (a)Sch. Biol. Sci., Natl. Univ. Singapore, 10 Kent Ridge Crescent, Singapore 119260**Singapore
JOURNAL: Aquaculture 158 (1-2):p1-10 Dec. 1, 1997
ISSN: 0044-8486
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: A 316 bp gene fragment containing a potential antigenic epitope of the 48 kDa immobilization antigen of *Ichthyophthirius multifiliis* (i-AgI) was assembled from six synthetic oligonucleotides and cloned into a bacterial expression vector pGEX2T. The gene construct was introduced into *Escherichia coli* and the glutathione S-transferase-iAgI (GST-iAgI) fusion protein was successfully expressed. Antisera against GST-iAgI fusion protein from catfish showed a positive reaction with a tomites protein of about 48 kDa, suggesting that the recombinant protein contains an antigenic epitope of i-AgI. Naive goldfish that were immunized with purified GST-iAgI fusion protein were challenged with a lethal dose of infectious tomites of *I. multifiliis*. The results showed that the average survival rate of the immunized fish was 95% as compared to 55% for the control fish. All these findings suggest that the recombinant GST-iAgI fusion protein can be used as a potential vaccine against the infection of *I. multifiliis*.

13/7/8 (Item 2 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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11151142 BIOSIS NO.: 199799772287
Toward a subunit vaccine against *Ichthyophthirius multifiliis*.
BOOK TITLE: Developments in Biological Standardization; Fish vaccinology
AUTHOR: Lin T L; Clark T G; Dickerson H W
BOOK AUTHOR/EDITOR: Gudding R; Lillehaug A; Midtlyng P J; Brown F: Eds
AUTHOR ADDRESS: Dep. Med. Microbiol., Univ. Ga., Athens, GA**USA
JOURNAL: Developments in Biological Standardization 90p461 1997
BOOK PUBLISHER: S. Karger AG, P.O. Box, Allschwilerstrasse 10, CH-4009 Basel, Switzerland
S. Karger AG, New York, New York, USA

CONFERENCE/MEETING: Meeting Oslo, Norway June 5-7, 1996
ISSN: 0301-5149 ISBN: 3-8055-6482-1
RECORD TYPE: Citation
LANGUAGE: English

13/7/9 (Item 3 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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10382393 BIOSIS NO.: 199699003538
Cell-mediated immune response of goldfish, *Carassius auratus* (L.), to
Ichthyophthirius multifiliis.
AUTHOR: Sin Y M (a); Ling K H; Lam T J
AUTHOR ADDRESS: (a)Dep. Zool., Natl. Univ. Singapore, Singapore 0511**
Singapore
JOURNAL: Journal of Fish Diseases 19 (1):p1-7 1996
ISSN: 0140-7775
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Goldfish, *Carassius auratus* (L.), were intraperitoneally injected with two doses of *Ichthyophthirius multifiliis* (each containing 2.3 times 10-6 live tomites) in saline, 30 days apart. The control fish were injected with saline only. Two weeks after the last vaccination, fish of both groups were intradermally injected with 2.5 times 10-5 live tomites for intradermally injected with antigen-injected site of the vaccinated fish increased in thickness from 8 h onwards and reached a peak at 24 h. Histological study showed a heavy infiltration of mononuclear leucocytes at the antigen-injected site. In contrast, no such changes were encountered in control fish. The migration area of pronephros cells from the vaccinated fish was significantly inhibited, in vitro, compared to controls with the presence of antigens. These findings suggest that the tomite-vaccinated fish produced a cell-mediated immune response. However, vaccinated fish also exhibited significantly higher titres of immobilizing antibodies in their sera and mucus than the controls. Therefore, it is likely that both humoral and cell-mediated immune responses have to work closely together to eliminate the infectious tomites of *I. multifiliis* which succeed in penetrating the fish epithelial tissues.

13/7/10 (Item 4 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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09213325 BIOSIS NO.: 199497221695
Passive transfer of protective immunity against ichthyophthiriasis from vaccinated mother to fry in tilapias, *Oreochromis aureus*.
AUTHOR: Sin Y M (a); Ling K H; Lam T J
AUTHOR ADDRESS: (a)Dep. Zool., National Univ. Singapore, 10 Kent Ridge Road, 05111**Singapore
JOURNAL: Aquaculture 120 (3-4):p229-237 1994
ISSN: 0044-8486
DOCUMENT TYPE: Article
RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Tilapias, *Oreochromis aureus*, were vaccinated twice with live tomites of *Ichthyophthirius multifiliis* in physiological saline 1 month before spawning (test group). A control group was similarly treated but with physiological saline only. Fertilized eggs were collected from the mouths of both groups and incubated until the young reached the free-swimming stage. Free-swimming fry were also collected immediately after they were expelled from the mother's mouth in other fish of the two groups. The fry were exposed to infective tomites of *I. multifiliis* and thereafter returned to their holding tanks. All fry obtained from the controls without mouth-brooding died after tomita exposure. However, fry with mouthbrooding before tomita exposure showed 37.3% survival. On the other hand, fry obtained from vaccinated broodstock without mouth-brooding exhibited 78.4% survival which increased to 95.3% with mouth-brooding. The protective immunity is correlated with the titres of anti-*I. multifiliis* antibodies in the soluble extracts of fry tissues and the mother's plasma. The results clearly indicate that protective immunity against ichthyophthiriasis "ich" in tilapia fry can not only be derived directly from the mother via eggs but also be acquired indirectly from the mouth cavity during the brooding period. The results thus suggest that proper vaccination of mothers before spawning would effectively protect fry against a protozoan disease.

13/7/11 (Item 5 from file: 5)
DIALOG(R) File 5: Biosis Previews(R)
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09070677 BIOSIS NO.: 199497079047
Antibody binding following exposure of live *Ichthyophthirius multifiliis* (Ciliophora) to serum from immune carp *Cyprinus carpio*.
AUTHOR: Cross M L
AUTHOR ADDRESS: Department Veterinary Science, University of Arizona, Tucson, AZ 85721**USA
JOURNAL: Diseases of Aquatic Organisms 17 (2):p159-164 1993
ISSN: 0177-5103
DOCUMENT TYPE: Article
RECORD TYPE: Abstract
LANGUAGE: English

ABSTRACT: Trophont stages of the ciliate fish parasite *Ichthyophthirius multifiliis* were incubated alive in vitro in serum from immune carp *Cyprinus carpio* and subsequently examined immunohistologically for bound antibody. Parasites became immobilized in immune serum and were enveloped by gelatinous mucus-like material. Carp antibody could not be detected bound to cilia membranes (the major surface antigens), although it was detected at low levels in parasite food vacuoles and associated with the gelatinous material. This material is probably responsible for the immobilization of parasites, and may form a barrier that prevents access of large amounts of cilia-membrane-specific antibody to the parasite surface during in vitro incubation in fish serum.

13/7/12 (Item 6 from file: 5)
DIALOG(R) File 5: Biosis Previews(R)
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09064006 BIOSIS NO.: 199497072376

Effect of copper sulphate on ichthyophthiriasis (white spot disease) in goldfish (*Carassius auratus*).

AUTHOR: Ling K H; Sin Y M (a); Lam T J

AUTHOR ADDRESS: (a)Dep. Zool., National Univ. Singapore, Lower Kent Ridge Rd., Singapore 0511**Singapore

JOURNAL: Aquaculture 118 (1-2):p23-35 1993

ISSN: 0044-8486

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Goldfish (*Carassius auratus*) exposed to a CuSO_4 solution of 255 $\mu\text{g Cu-2+}/\text{l}$ for 2 weeks and then transferred to copper-free water for 1 week, or exposed to a CuSO_4 solution of 288 $\mu\text{g Cu-2+}/\text{l}$ for 2 h, showed 88.9% protection against *Ichthyophthirius multifiliis* as compared to 5.6% and 3.7% respectively in the control groups. The 24, 48, 72 and 96-h LC-50 values for copper sulphate in goldfish under local tap water conditions (pH 6.8-7.4 and hardness 72.5-80.3 mg CaCO_3/l) were 365, 355, 301 and 288 $\mu\text{g Cu-2+}/\text{l}$ as CuSO_4 cntdot 5H-2O respectively. The copper levels of fish tissue and tank water were also determined and its role in protection against *I. multifiliis* discussed.

13/7/13 (Item 7 from file: 5)

DIALOG(R)File 5:Biosis Previews(R)

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08994890 BIOSIS NO.: 199497003260

Protection of goldfish against some common ectoparasitic protozoans using *Ichthyophthirius multifiliis* and *Tetrahymena pyriformis* for vaccination.

AUTHOR: Ling K H; Sin Y M (a); Lam T J

AUTHOR ADDRESS: (a)Dep. Zool., Natl. Univ. Singapore, Lower Kent Ridge Road, Singapore 0511**Singapore

JOURNAL: Aquaculture 116 (4):p303-314 1993

ISSN: 0044-8486

DOCUMENT TYPE: Article

RECORD TYPE: Abstract

LANGUAGE: English

ABSTRACT: Goldfish (*Carassius auratus*) were vaccinated with live tomites of *Ichthyophthirius multifiliis* (Fouquet) and *Tetrahymena pyriformis* (Lwoff) by immersion or intraperitoneal injection. They were then challenged with *I. multifiliis* and some other common ectoparasitic protozoans, such as *Oodinium pillularis* (Schaperclaus), *Ichthyobodo necatrix*, *Chilodonella cyprini*, and *Trichodina* sp. Results indicated that goldfish vaccinated with either *I. multifiliis* or *T. pyriformis* developed protective immunity not only against the *I. multifiliis* but also towards other ectoparasitic protozoans which are commonly found in the tropics. The results also showed that the protection was correlated with the antibody titers in their plasma and skin mucus.

13/7/14 (Item 8 from file: 5)

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08134179 BIOSIS NO.: 000093121327
PROTECTION AGAINST VELVET DISEASE IN GOLDFISH RECOVERED FROM
ICHTHYOPHTHIRIASIS
AUTHOR: SIN Y M ; LING K H; LAM T J
AUTHOR ADDRESS: DEP. ZOOL., NATIONAL UNIV. OF SINGAPORE, LOWER KENT RIDGE
RD., SINGAPORE 0511.
JOURNAL: AQUACULTURE 102 (1-2). 1992. 187-191. 1992
FULL JOURNAL NAME: Aquaculture
CODEN: AQCLA
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: Goldfish when exposed to *Oodinium pillularis* for 21 days showed an 88% mortality rate. On the contrary, only an 8% mortality rate was found in fish which were previously exposed to and recovered from the infection of *Ichthyophthirius multifiliis*. The protection against *O. pillularis* in the latter could be attributed to the presence of higher antibody levels against *O. pillularis* in their blood. The results therefore suggest that *I. multifiliis* and *O. pillularis* might share some common cell-surface antigens.

13/7/15 (Item 9 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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08098375 BIOSIS NO.: 000042090573
A NEW APPROACH TO CONTROLLING ICHTHYOPHTHIRIASIS IN A CLOSED CULTURE
SYSTEM OF FRESHWATER ORNAMENTAL FISH
AUTHOR: LING K H; SIN Y M ; LAM T J
AUTHOR ADDRESS: FAC. SCI. NATL. UNIV. SINGAPORE, LOWER KENT RIDGE RD.,
SINGAPORE 0511.
JOURNAL: J FISH DIS 14 (5). 1991. 595-598. 1991
FULL JOURNAL NAME: Journal of Fish Diseases
CODEN: JFIDD
RECORD TYPE: Citation
LANGUAGE: ENGLISH

13/7/16 (Item 10 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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07401113 BIOSIS NO.: 000091016723
IMMUNIZATION OF CHANNEL CATFISH *ICTALURUS-PUNCTATUS* RAFINESQUE AGAINST
ICHTHYOPHTHIRIUS- MULTIFILIIS FOUQUET KILLED VERSUS LIVE VACCINES
AUTHOR: BURKART M A; CLARK T G; DICKERSON H W
AUTHOR ADDRESS: DEP. GENET., UNIV. GA., ATHENS, GA., USA.
JOURNAL: J FISH DIS 13 (5). 1990. 401-410. 1990
FULL JOURNAL NAME: Journal of Fish Diseases
CODEN: JFIDD
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: Fish surviving infection with the pathogenic ciliated protozoan,

Ichthyophthirius multifiliis (Fouquet, 1876), become resistant to subsequent infection by the parasite. The acquired immunity suggests that development of a vaccine against the parasite may be possible. Because of the advantages of immunoprophylaxis for treatment of the disease, an effort has been made to determine whether fish exposed to killed parasite preparations can resist subsequent lethal challenge. Both the route of administration and the effects of stage specific antigens have been examined. Channel catfish vaccinated by intraperitoneal (i.p.) injection or bath immersion with killed I. multifiliis tomites show 100% mortality following a standard challenge protocol. Similarly, 100% mortality was observed in test groups injected with tomites cilia. In both cases, a consistent difference in days to death between control and test group animals was observed. Although completed mortality was seen with fish injected with tomites preparations, fish vaccinated with killed trophonts (the feeding stage of the parasite) had a much greater degree of protection with approximately 50% of fish surviving an otherwise lethal challenge. Finally, animals injected intraperitoneally with live tomites showed nearly complete immunity and were identical in their response to fish which survive natural infection. The response of fish vaccinated with live parasites indicates that animals injected intraperitoneally can develop surface immunity and that i.p. injection is a suitable route of administration for potential I. multifiliis vaccines .

13/7/17 (Item 11 from file: 5)
DIALOG(R) File 5: Biosis Previews(R)
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07307618 BIOSIS NO.: 000090087508

IMMUNOSUPPRESSION IN JUVENILE CARP CYPRINUS-CARPIO L. THE EFFECTS OF THE
CORTICOSTEROIDS TRIAMCINOLONE ACETONIDE AND HYDROCORTISONE
21-HEMISUCCINATE CORTISOL ON ACQUIRED IMMUNITY AND THE HUMORAL ANTIBODY
RESPONSE TO ICHTHYOPHTHIRIUS- MULTIFILIIS FOUQUET
AUTHOR: HOUGHTON G; MATTHEWS R A
AUTHOR ADDRESS: MARINE LAB., P.O. BOX 101, VICTORIA ROAD, ABERDEEN AB9 8DB,
SCOTLAND.
JOURNAL: J FISH DIS 13 (4). 1990. 269-280. 1990
FULL JOURNAL NAME: Journal of Fish Diseases
CODEN: JFIDD
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: Juvenile carp, Cyprinus carpio L., were immunized against Ichthyophthirius multifiliis following controlled exposure to the infective theront stage. On challenge, with a potentially lethal dose of theronts, all immunized fish survived, in contrast to 100% mortality in non-immunized fish. Fourteen days following exposure to the challenge infection, immune and non-immune fish were injected intraperitoneally with either triamcinolone acetonide or hydrocortisone 21-hemisuccinate (cortisol) at doses of 100 .mu.g or 10 .mu.g/g body weight. Controls, including immunized and non-immunized fish, were injected with saline or left untreated. Six days following corticosteroid administration, fish were exposed to challenge infections of I. multifiliis. All fish treated with corticosteroid developed heavy infections with up to 100% mortality. Repeat experiments gave comparable results. Serum antibody levels recorded in similarly treated fish at intervals of 12 h and/or 1 week following corticosteroid administration were found to be relatively

unaffected. The results are discussed in relation to the immune response to *I. multifiliis*.

13/7/18 (Item 12 from file: 5)
DIALOG(R) File 5: Biosis Previews(R)
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06732052 BIOSIS NO.: 000088041479
AN EXPERIMENTAL STUDY INTO THE POSSIBLE PROTECTION OF FRY FROM
ICHTHYOPHTHIRIUS-MULTIFILIIS FOUQUET INFECTIONS DURING MOUTHBROODING OF
OREOCHROMIS-MOSSAMBICUS PETERS
AUTHOR: SUBASINGHE R P; SOMMERVILLE C
AUTHOR ADDRESS: DEP. ZOOL., UNIV. COLOMBO, P.O. BOX 1490 COLOMBO 3, SRI
LANKA.
JOURNAL: J FISH DIS 12 (2). 1989. 143-150. 1989
FULL JOURNAL NAME: Journal of Fish Diseases
CODEN: JFIDD
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: The tilapine fish species belonging to the genus *Oreochromis* brood developing eggs and early fry in their buccal cavities. Though it is obvious that mouth brooding facilitates a physical protection from environmental hazards by keeping fry in this confined environment, it is still not clear whether mouth brooding provides any other type of protection to the early fry against pathogens. Investigations were made to study the possibility of protection of early fry of *O. mossambicus* against infections of the ciliate parasite *Ichthyophthirius multifiliis* during mouth brooding. Adult females were effectively immunized against *I. multifiliis*. Brooding immune females were then challenged with controlled infections of *I. multifiliis* tomites and the survival of the fry compared to those of challenged non-immune brooding females. The study demonstrated that there was some protection from the infection conferred to fry during mouthbrooding.

13/7/19 (Item 13 from file: 5)
DIALOG(R) File 5: Biosis Previews(R)
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06269157 BIOSIS NO.: 000086103340
PROTECTIVE EFFECT OF NATURAL ANTIBODIES IN CARP FINGERLINGS IN PARASITE
INFESTATIONS
AUTHOR: BALAKHNIN I A; DAVYDOV O N
AUTHOR ADDRESS: INST. ZOOL., ACAD. SCI. UKR. SSR, KIEV, USSR.
JOURNAL: GIDROBIOL ZH 24 (1). 1988. 39-43. 1988
FULL JOURNAL NAME: Gidrobiologicheskii Zhurnal
CODEN: GBZUA
RECORD TYPE: Abstract
LANGUAGE: RUSSIAN

ABSTRACT: The paper deals with the level and occurrence frequency of natural antibodies-heterohemagglutinins in the serum of carp fingerlings which are to a different extent invaded by parasites (*Ichthyophthirius* *Trichodina*, *Dactylogyrus*, *Gyrodactylus* *Gynodactylus* *Bothriocephalus*). A protective action of the mentioned antibodies in respect to

Ichthyophthirius on antigen Bothriocephalus the level of heterohemagglutinin are shown.

13/7/20 (Item 14 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
(c) 2001 BIOSIS. All rts. reserv.

03818292 BIOSIS NO.: 000025071365
ICHTHYOPHTHIRIASIS IMMERSION IMMUNIZATION OF RAINBOW TROUT
SALMO-GAIRDNERI USING TETRAHYMENA-THERMOPHILA AS A PROTECTIVE IMMUNOGEN
AUTHOR: WOLF K; MARKIW M E
AUTHOR ADDRESS: US FISH WILDLIFE SERVICE, NATIONAL FISH HEALTH RES. LAB.,
BOX 700, KEARNEYSVILLE, W. VA. 25430, USA.
JOURNAL: CAN J FISH AQUAT SCI 39 (12). 1982. 1722-1725. 1982
FULL JOURNAL NAME: Canadian Journal of Fisheries and Aquatic Sciences
CODEN: CJFSD
RECORD TYPE: Citation
LANGUAGE: ENGLISH

13/7/21 (Item 15 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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03338853 BIOSIS NO.: 000072066957
PROTECTION OF CHANNEL CATFISH ICTALURUS-PUNCTATUS AGAINST ICHTHYOPHTHIRIUS
- MULTIFILIIS BY IMMUNIZATION WITH VARYING DOSES OF
TETRAHYMENA-PYRIFORMIS CILIA
AUTHOR: GOVEN B A; DAWE D L; GRATZEK J B
AUTHOR ADDRESS: DEP. MED. MICROBIOL., COLL. VET. MED., UNIV. GA., ATHENS,
GA. 30602.
JOURNAL: AQUACULTURE 23 (1-4). 1981. 269-274. 1981
FULL JOURNAL NAME: Aquaculture
CODEN: AQCLA
RECORD TYPE: Abstract
LANGUAGE: ENGLISH

ABSTRACT: Channel catfish, *Ictalurus punctatus*, were immunized with varying doses of *T. pyriformis* ciliary antigen and challenged with *Ichthyophthirius multifiliis*. Two doses of either 5 or 25 μ g of *T. pyriformis* ciliary antigen conferred a high degree of protection against challenge with *I. multifiliis*. Only 3.1% (5 μ g dose) and 2.8% (5 μ g dose) of the fish in these groups developed clinical disease resulting in death. Two doses of either 10 or 2.5 μ g of antigen produced a significant, but not acceptable, degree of protection, while 1.0 μ g of antigen produced no protection.

13/7/22 (Item 16 from file: 5)
DIALOG(R)File 5:Biosis Previews(R)
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03232588 BIOSIS NO.: 000071045699
PROTECTION OF CHANNEL CATFISH ICTALURUS-PUNCTATUS AGAINST ICHTHYOPHTHIRIUS
- MULTIFILIIS BY IMMUNIZATION
AUTHOR: GOVEN B A; DAWE D L; GRATZEK J B

AUTHOR ADDRESS: INQ.: DEP. MED. MICROBIOL., COLL. VET. MED., UNIV. GA.,
ATHENS, GA., 30602.

JOURNAL: J FISH BIOL 17 (3). 1980. 311-316. 1980

FULL JOURNAL NAME: Journal of Fish Biology

CODEN: JFIBA

RECORD TYPE: Abstract

LANGUAGE: ENGLISH

ABSTRACT: Channel catfish, *I. punctatus* Rafinesque, were immunized with ciliary and whole cell preparations of *Ichthyophthirius multifiliis* Fouquet 1876 and subsequently challenged with *I. multifiliis*. Similar *Tetrahymena pyriformis* Lwoff 1947 preparations were used to determine if this heterologous immunization would elicit a protective immune response against *I. multifiliis* infestation. Results indicate that *T. pyriformis* ciliary antigens provided the greatest degree of protection.

13/7/23 (Item 1 from file: 73)

DIALOG(R) File 73:EMBASE

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06627362 EMBASE No: 1996292166

Passive immunization of channel catfish (*Ictalurus punctatus*) against the ciliated protozoan parasite *Ichthyophthirius multifiliis* by use of murine monoclonal antibodies

Tian Long Lin; Clark T.G.; Dickerson H.

Department of Medical Microbiology, Univ. of GA Coll. of Veterinary Med.,
D. W. Brooks Dr., Athens, GA 30602 United States

Infection and Immunity (INFECT. IMMUN.) (United States) 1996, 64/10
(4085-4090)

CODEN: INFIB ISSN: 0019-9567

DOCUMENT TYPE: Journal; Article

LANGUAGE: ENGLISH SUMMARY LANGUAGE: ENGLISH

Fish acquire immunity against the ciliated protozoan parasite *Ichthyophthirius multifiliis* following sublethal infection. The immune response includes the elaboration of humoral antibodies against a class of abundant surface membrane proteins referred to as immobilization antigens (i- antigens). Antibodies against these proteins immobilize the parasite in vitro, suggesting a potential role for the i-antigens in protective immunity. To test this hypothesis, passive immunization experiments were carried out with naive channel catfish, *Ictalurus punctatus*, using immobilizing murine monoclonal antibodies (MAbs). Fish were completely protected against lethal challenge following intraperitoneal injection of 20 to 200 mug of MAb. Although fish succumbed to infection at lower doses, palliative effects were observed with as little as 2 mug of antibody. In experiments in which animals were challenged at various times following inoculation, an inverse relationship between parasite load and serum immobilizing activity was seen. Of seven MAbs which conferred protection, all were immunoglobulin G class antibodies. The only immobilizing MAb that failed to protect was an immunoglobulin M antibody that was absent from surface mucosa as determined by enzyme-linked immunosorbent assay. The implications of these findings for the development of a vaccine against *I. multifiliis* and immunity against surface pathogens of fish are discussed.

13/7/24 (Item 1 from file: 399)
DIALOG(R)File 399:CA SEARCH(R)
(c) 2001 AMERICAN CHEMICAL SOCIETY. All rts. reserv.

133163031 CA: 133(12)163031q PATENT
Diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis
INVENTOR(AUTHOR): Clark, Theodore G.; Dickerson, Harry W., Jr.; Lin, Tian-Long
LOCATION: USA
ASSIGNEE: University of Georgia Research Foundation, Inc.; Cornell Research Foundation, Inc.
PATENT: PCT International ; WO 200046373 A1 DATE: 20000810
APPLICATION: WO 2000US2962 (20000204) *US PV118634 (19990204) *US PV122372 (19990302) *US PV124905 (19990317) *US PV131121 (19990427)
PAGES: 144 pp. CODEN: PIXXD2 LANGUAGE: English CLASS: C12N-015/30A; C07K-014/44B; A61K-039/002B; A61K-048/00B; C12N-015/62B; C07K-019/00B; C12N-001/11B; C07K-016/20B; C12Q-001/68B DESIGNATED COUNTRIES: AE; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BY; CA; CH; CN; CR; CU; CZ; DE; DK; DM; EE; ES; FI; GB; GD; GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MA; MD; MG; MK; MN; MW; MX; NO; NZ; PL; PT; RO; RU; SD; SE; SG; SI; SK; SL; TJ; TM; TR; TT; TZ; UA; UG; UZ; VN; YU; ZA; ZW; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM DESIGNATED REGIONAL: GH; GM; KE; LS; MW; SD ; SL; SZ; TZ; UG; ZW; AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ; CF; CG; CI; CM; GA; GN; GW; ML; MR; NE; SN; TD; TG

SECTION:
CA215002 Immunochemistry
CA203XXX Biochemical Genetics
CA206XXX General Biochemistry
CA210XXX MICROBIAL, ALGAL, AND FUNGAL BIOCHEMISTRY
CA212XXX Nonmammalian Biochemistry
IDENTIFIERS: Ichthyophthirius antigen gene sequence fish vaccine
DESCRIPTORS:
Antibodies... DNA sequences... Fish... Ichthyophthirius multifiliis...
Molecular cloning... Nucleic acid amplification(method)... Protein sequences...
diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis
Gene,microbial...
IAG48(G1); diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis
Gene,microbial...
IAG55(G5); diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis
Diagnosis...
mol.; diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis
Vaccines...
oral; diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis
Animal cell... Bacteria(Eubacteria)... Escherichia coli... Insect(Insecta) ... Komagataella pastoris... Tetrahymena... Yeast...
recombinant expression host; diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis
Antigens...
48-kilodalton and 55-kilodalton; diagnostic and protective antigen gene

sequences of Ichthyophthirius multifiliis

CAS REGISTRY NUMBERS:

229018-87-5 287498-42-4 287498-44-6 amino acid sequence; diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis
225709-16-0 287498-39-9 287498-40-2 287498-41-3 287498-43-5 nucleotide sequence; diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis
287471-43-6 287471-44-7 287471-45-8 287471-46-9 287471-47-0
287471-48-1 primer complementary to; diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis
287498-45-7 287498-46-8 287498-47-9 287498-48-0 287498-49-1
287498-50-4 primer; diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis
78809-73-1 245735-23-3 287122-42-3 287122-44-5 287498-74-2 287498-79-7
287498-80-0 287498-81-1 287498-82-2 287498-83-3 287498-84-4
287498-85-5 287498-86-6 287498-87-7 287498-88-8 287498-89-9
287498-90-2 287498-91-3 287498-92-4 287498-99-1 287499-00-7
287499-01-8 287499-02-9 287499-03-0 287499-04-1 287499-05-2
287499-06-3 287499-07-4 287499-08-5 287499-09-6 287499-10-9
287499-11-0 287499-12-1 287499-13-2 287499-14-3 287499-15-4
287499-16-5 287499-17-6 287499-18-7 287499-19-8 287499-20-1
287499-21-2 287499-23-4 unclaimed nucleotide sequence; diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis
287498-75-3 287498-76-4 287498-77-5 287498-78-6 287498-93-5
287498-94-6 287498-95-7 287498-96-8 287498-97-9 287498-98-0
287729-20-8 287729-21-9 287729-22-0 287729-23-1 287729-24-2
287729-30-0 287731-35-5 287731-47-9 287731-48-0 287731-51-5
unclaimed protein sequence; diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis
287484-12-2 287484-13-3 287484-14-4 287484-15-5 287484-16-6
287484-17-7 287484-18-8 287484-19-9 287484-20-2 287484-21-3
287484-22-4 287484-23-5 287484-24-6 287484-25-7 287484-26-8
287484-27-9 287484-28-0 287484-29-1 unclaimed sequence; diagnostic and protective antigen gene sequences of Ichthyophthirius multifiliis

13/7/25 (Item 2 from file: 399)

DIALOG(R) File 399:CA SEARCH(R)

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133160546 CA: 133(12)160546a PATENT

The ciliated protozoan Tetrahymena as an expression host and selection methods for use with them

INVENTOR(AUTHOR): Gaertig, Jacek; Dickerson, Harry W., Jr.; Clark, Theodore G.

LOCATION: USA

ASSIGNEE: University of Georgia Research Foundation, Inc.

PATENT: PCT International ; WO 200046381 A1 DATE: 20000810

APPLICATION: WO 2000US2966 (20000204) *US PV118634 (19990204) *US PV122372 (19990302) *US PV124905 (19990317) *US PV131121 (19990427)

PAGES: 83 pp. CODEN: PIXXD2 LANGUAGE: English CLASS: C12N-015/79A; C12N-015/85B; C12P-021/00B; G01N-033/569B; A61K-039/002B; A61K-038/17B

DESIGNATED COUNTRIES: AE; AL; AM; AT; AU; AZ; BA; BB; BG; BR; BY; CA; CH; CN; CR; CU; CZ; DE; DK; DM; EE; ES; FI; GB; GD; GE; GH; GM; HR; HU; ID; IL; IN; IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR; LS; LT; LU; LV; MA; MD; MG; MK; MN; MW; MX; NO; NZ; PL; PT; RO; RU; SD; SE; SG; SI; SK; SL; TJ; TM; TR; TT; TZ; UA; UG; UZ; VN; YU; ZA; ZW; AM; AZ; BY; KG; KZ; MD; RU; TJ; TM

DESIGNATED REGIONAL: GH; GM; KE; LS; MW; SD; SL; SZ; TZ; UG; ZW; AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LU; MC; NL; PT; SE; BF; BJ; CF; CG; CI; CM; GA; GN; GW; ML; MR; NE; SN; TD; TG

SECTION:

CA203002 Biochemical Genetics

CA210XXX MICROBIAL, ALGAL, AND FUNGAL BIOCHEMISTRY

CA212XXX Nonmammalian Biochemistry

CA215XXX Immunochemistry

IDENTIFIERS: Tetrahymena expression host transformation selection, tubulin paclitaxel selection marker Tetrahymena transformation, Ichthyophthirius vaccine antigen gene expression Tetrahymena

DESCRIPTORS:

Antibodies...

antigen synthesis by Tetrahymena for raising of; ciliated protozoan

Tetrahymena as expression host and selection methods for use with them

Swimming...

as indicator in immunoassays using Tetrahymena presenting antigens;

ciliated protozoan Tetrahymena as expression host and selection methods for use with them

Tubulins...

.beta.-; ciliated protozoan Tetrahymena as expression host and

selection methods for use with them

Gene,microbial...

BTU1, as selectable marker for transformation of Tetrahymena; ciliated protozoan Tetrahymena as expression host and selection methods for use with them

Gene,microbial...

BTU2, in transformation of Tetrahymena; ciliated protozoan Tetrahymena as expression host and selection methods for use with them

Ciliate(Ciliophora)... Protozoa... Tetrahymena thermophila... Tetrahymena

...

ciliated protozoan Tetrahymena as expression host and selection methods for use with them

Actins...

gene for, in transformation of Tetrahymena; ciliated protozoan

Tetrahymena as expression host and selection methods for use with them

Gene,microbial...

HHF1, in transformation of Tetrahymena; ciliated protozoan Tetrahymena as expression host and selection methods for use with them

Antigens...

I antigen, of Ichthyophthirius multifiliis, expression in Tetrahymena; ciliated protozoan Tetrahymena as expression host and selection methods for use with them

Vaccines...

Ichthyophthirius multifiliis, for freshwater fish; ciliated protozoan Tetrahymena as expression host and selection methods for use with them

Transformation,genetic...

of Tetrahymena; ciliated protozoan Tetrahymena as expression host and selection methods for use with them

Glycophospholipids...

phosphatidylinositol-contg., membrane anchoring of antigens using, in Tetrahymena; ciliated protozoan Tetrahymena as expression host and selection methods for use with them

Gene,microbial...

rpl29, in transformation of Tetrahymena; ciliated protozoan Tetrahymena as expression host and selection methods for use with them

Gene,microbial...

SerH3, in transformation of Tetrahymena; ciliated protozoan Tetrahymena as expression host and selection methods for use with them
Cell membrane...
Tetrahymena, presentation of foreign antigens on; ciliated protozoan Tetrahymena as expression host and selection methods for use with them
Immunoassay...
Tetrahymena presenting antigens for; ciliated protozoan Tetrahymena as expression host and selection methods for use with them
Ichthyophthirius multifiliis...
transgenic Tetrahymena presenting I-antigen of; ciliated protozoan Tetrahymena as expression host and selection methods for use with them
Ictalurus punctatus...
vaccination against Ichthyophthirius multifiliis; ciliated protozoan Tetrahymena as expression host and selection methods for use with them
CAS REGISTRY NUMBERS:
33069-62-4 84420-34-8 resistance to, in selection system for transgenic Tetrahymena; ciliated protozoan Tetrahymena as expression host and selection methods for use with them
287741-24-6 287741-25-7 287741-26-8 287741-27-9 287741-28-0
287741-29-1 unclaimed nucleotide sequence; ciliated protozoan Tetrahymena as an expression host and selection methods for use with them
287498-42-4 287946-71-8 287946-72-9 287946-73-0 287946-74-1
287946-75-2 287946-76-3 287946-77-4 unclaimed sequence; ciliated protozoan Tetrahymena as an expression host and selection methods for use with them

13/7/26 (Item 3 from file: 399)
DIALOG(R) File 399:CA SEARCH(R)
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127134688 CA: 127(10)134688e PATENT
Immunized fish for controlling infectious diseases in fish and other aquatic lifeforms in a closed culture system
INVENTOR(AUTHOR): Sin, Y. M.; Ling, K. H.; Lam, T. J.
LOCATION: Singapore,
ASSIGNEE: National University of Singapore
PATENT: United States ; US 5643571 A DATE: 19970701
APPLICATION: US 466025 (19950606) *US 929865 (19920817) *US 103054 (19930809)
PAGES: 14 pp. Cont. of U.S. Ser. No. 103,054, abandoned. CODEN: USXXAM
LANGUAGE: English CLASS: 424159100; A61K-039/40A; A61K-039/42B;
C07K-016/08B; C07K-016/12B
SECTION:
CA215003 Immunochemistry
CA212XXX Nonmammalian Biochemistry
IDENTIFIERS: immunized fish mucus antibody infection
DESCRIPTORS:
Diseases(animal)...
fin-rot and gill-rot (fish); mucosal antibody secreted by immunized fish for controlling infectious diseases in fish and other aquatic lifeforms in a closed culture system
Mucus...
fish; mucosal antibody secreted by immunized fish for controlling infectious diseases in fish and other aquatic lifeforms in a closed culture system

Aquatic animal...

freshwater; mucosal antibody secreted by immunized fish for controlling infectious diseases in fish and other aquatic lifeforms in a closed culture system

Aeromonas... Angelfish... Aquatic animal... Bacteria(Eubacteria)... Capoeta tetrazona... Carassius... Catfish... Chilodonella... Crustacean(Crustacea) ... Development(nonmammalian postembryonic)... Echinoderm(Echinodermata)... Fish... Goldfish(Carassius auratus)... Ichthyobodo... Ichthyophthirius multifiliis... Ichthyophthirius... Marine animal... Mollusk(Mollusca)... Oodinium... Pathogenic microorganism... Ponds... Tanks(containers)... Trichodina... Xiphophorus maculatus...

mucosal antibody secreted by immunized fish for controlling infectious diseases in fish and other aquatic lifeforms in a closed culture system

Antibodies...

mucosal; mucosal antibody secreted by immunized fish for controlling infectious diseases in fish and other aquatic lifeforms in a closed culture system

Protozoa...

parasite; mucosal antibody secreted by immunized fish for controlling infectious diseases in fish and other aquatic lifeforms in a closed culture system

Parasite...

protozoan; mucosal antibody secreted by immunized fish for controlling infectious diseases in fish and other aquatic lifeforms in a closed culture system

Skin diseases...

slimy (fish); mucosal antibody secreted by immunized fish for controlling infectious diseases in fish and other aquatic lifeforms in a closed culture system

Diseases(animal)...

velvet (fish); mucosal antibody secreted by immunized fish for controlling infectious diseases in fish and other aquatic lifeforms in a closed culture system

White spot baculovirus...

white spot syndrome from; mucosal antibody secreted by immunized fish for controlling infectious diseases in fish and other aquatic lifeforms in a closed culture system

Viral infection...

white spot syndrome; mucosal antibody secreted by immunized fish for controlling infectious diseases in fish and other aquatic lifeforms in a closed culture system

13/7/27 (Item 4 from file: 399)

DIALOG(R)File 399:CA SEARCH(R)

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117231761 CA: 117(23)231761z JOURNAL

Purification and partial characterization of immobilization antigens from Ichthyophthirius multifiliis

AUTHOR(S): Lin, Tian Long; Dickerson, Harry W.

LOCATION: Fujian Acad. Agric. Sci., Fuzhou, Peop. Rep. China,

JOURNAL: J. Protozool. DATE: 1992 VOLUME: 39 NUMBER: 4 PAGES: 457-63

CODEN: JPROAR ISSN: 0022-3921 LANGUAGE: English

SECTION:

CA215002 Immunochemistry

CA210XXX Microbial Biochemistry

IDENTIFIERS: immobilization antigen Ichthyophthirius, monoclonal antibody
Ichthyophthirius immobilization antigen

DESCRIPTORS:

Ichthyophthirius multifiliis...

immobilization antigens of, purifn. and partial characterization of
Antigens, immobilization...

of Ichthyophthirius multifiliis, purifn. and partial characterization
of

Antibodies, monoclonal...

to immobilization antigens of Ichthyophthirius multifiliis

13/7/28 (Item 1 from file: 351)

DIALOG(R) File 351:Derwent WPI

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013343023

WPI Acc No: 2000-514962/200046

Recombinant expression systems for expressing heterologous nucleic acids
and producing recombinant protein, comprises nonpathogenic protozoa such
as Tetrahymena resistant to paclitaxel

Patent Assignee: CLARK T G (CLAR-I); DICKERSON H W (DICK-I); GAERTIG J
(GAER-I); UNIV GEORGIA RES FOUND INC (UYGE-N)

Inventor: CLARK T G; DICKERSON H W; GAERTIG J

Number of Countries: 089 Number of Patents: 002

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200046381	A1	20000810	WO 2000US2966	A	20000204	200046 B
AU 200027563	A	20000825	AU 200027563	A	20000204	200059

Priority Applications (No Type Date): US 99131121 A 19990427; US 99118634 A
19990204; US 99122372 A 19990302; US 99124905 A 19990317

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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WO 200046381	A1	E	83	C12N-015/79	
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Designated States (National): AE AL AM AT AU AZ BA BB BG BR BY CA CH CN
CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP
KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE
SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR
IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW

AU 200027563	A			C12N-015/79	Based on patent WO 200046381
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Abstract (Basic): WO 200046381 A1

NOVELTY - A recombinant protein expression system (I) comprises a
transgenic protozoan host cell resistant to paclitaxel containing a
heterologous nucleic acid encoding a polypeptide, selectable by
negative selection using paclitaxel.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the
following:

(1) an expression vector (II) comprising a 5' flanking region
followed by a heterologous nucleic acid encoding a polypeptide
comprising at least one targeting amino acid sequence encoded by a
portion of an i-antigen-encoding nucleotide sequence from
Ichthyophthirius multifiliis followed by a 3' flanking region, where at
least a portion of each of the 5' flanking region and the 3' flanking
region is complementary to an endogenous gene of an intended host, to

allow integration into the endogenous gene by homologous recombination;

(2) a transgenic *Tetrahymena thermophila* comprising at least a portion of an *I. multifiliis* i-antigen protein;

(3) a transgenic cell (III) comprising a heterologous protein comprising at least one targeting amino acid sequence encoded by an i-antigen encoding nucleotide sequence from *I. multifiliis*;

(4) a method for preparing a polyclonal antibody;

(5) a method for detecting antibodies to an antigenic polypeptide comprising expressing the antigenic polypeptide on the surface of a transgenic protozoan host cell, exposing the host cell to an antibody and determining whether the swimming behavior of host cell is altered, where an alteration in the swimming behavior of the host cell is indicative of binding of the presence of antibodies to the antigenic polypeptide; and

(6) screening (IV) drugs for the ability to bind a polypeptide comprising expressing the polypeptide on the surface of a transgenic protozoan host cell, exposing the host cell to a drug and determining whether the swimming behavior of host cell is altered, where an alteration in the swimming behavior of the host cell is indicative of binding of the drug to the polypeptide;

(7) a vaccine (V) comprising a transgenic non-pathogenic immunogenic protozoan comprising a surface-displayed antigenic polypeptide; and

(8) recombinant methods of producing a polypeptide.

ACTIVITY - Protozoacide.

MECHANISM OF ACTION - Vaccine.

Tetrahymena thermophila cells were transformed with the entire IAG48(G1) gene of *I. multifiliis* G1 which encodes the GPI anchored 48 kDa i-antigen or a truncated gene sequence. Transformants encoding the intact or C-terminal truncated i-antigen were grown in standard *Tetrahymena* growth medium. Groups of channel catfish were immunized intraperitoneally with *T. thermophila* transformants producing intact or truncated i-antigen. Fish were injected two times at a 30 day interval and challenged 21 days after the last immunization G5 *Ichthyophthirius*. The results showed that a greater degree of protection was elicited in immunized fish compared to controls. The antibody response of fish injected with live cells secreting recombinant i-antigen was two fold greater than the antibody response of fish immunized with *Tetrahymena* producing the membrane-bound intact i-antigen.

USE - The protein expression systems are useful for producing a polypeptide, comprising introducing (I) into a protozoan host cell that is resistant to paclitaxel, or a ciliated protozoan host cell to yield a transgenic protozoan host cell that is selectable by negative selection using paclitaxel and expressing the transgenic polypeptide in the transgenic protozoan host cell (claimed). The polypeptide is preferably an antigenic polypeptide and is expressed on the plasma membrane surface of the host cell and cleaved from the membrane surface of the transgenic host cell. Transgenic ciliated protozoa are useful as live vaccines for stimulating an immune response in a vertebrate. The transgenic protozoan host cells are useful for producing polyclonal antibodies (claimed). The cells are also useful for detecting antibodies to the antigenic polypeptide, by exposing host cells expressing the antigenic polypeptide on the surface to an antibody and determining alteration in the swimming behavior of the protozoan host cell, where swimming behavior of the cell is altered in the presence of the antibodies to the antigenic polypeptide. The host cell is

immobilized and exposed to the body fluid of the patient suspected of being infected with the parasite (all claimed). Tetrahymena expressing I.multifiliis i-antigen protein on their surface are effective vehicles for vaccination of freshwater fish against infection by I.multifiliis.

ADVANTAGE - The protein expression systems are suitable for large scale and analytical scale production of recombinant polypeptides and are particularly useful for expression of polypeptides that are difficult to produce in conventional recombinant protein expression systems.

pp; 83 DwgNo 0/10

Derwent Class: B04; C06; D16; S03

International Patent Class (Main): C12N-015/79

International Patent Class (Additional): A61K-038/17; A61K-039/002; C12N-015/85; C12P-021/00; G01N-033/569

13/7/29 (Item 2 from file: 351)

DIALOG(R) File 351:Derwent WPI

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011372280 **Image available**

WPI Acc No: 1997-350187/199732

Controlling infectious diseases in aquatic life-forms - by adding immunised fish, which can release antibodies against pathogenic organisms, to aquatic media containing the aquatic life-forms

Patent Assignee: UNIV SINGAPORE NAT (UYSI-N)

Inventor: LAM T J ; LING K H; SIN Y M

Number of Countries: 001 Number of Patents: 001

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 5643571	A	19970701	US 92929865	A	19920817	199732 B
			US 93103054	A	19930809	
			US 95466025	A	19950606	

Priority Applications (No Type Date): US 93103054 A 19930809; US 92929865 A 19920817; US 95466025 A 19950606

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 5643571	A		14		CIP of application US 92929865 Cont of application US 93103054

Abstract (Basic): US 5643571 A

Controlling at least 1 pathogenic microorganism (selected from protozoan parasites and bacteria) which are detrimental to aquatic lifeforms (selected from fish, crustaceans, molluscs and echinoderms), comprises: (a) adding fish immunised against at least 1 of the pathogenic organisms to a culture system comprising an aquatic medium; (b) permitting the immunised fish to release antibodies against the pathogenic organisms into the aquatic medium; (c) adding the aquatic lifeforms to the aquatic medium in which the aquatic lifeforms are to be treated or protected, and (d) allowing the antibodies to immuno-react with the pathogenic organisms, thus controlling the pathogenic organisms.

USE - The method may be used for controlling diseases (such as white-spot disease, velvet disease, slimy skin disease and fin- and gill-rot diseases) caused by pathogenic organisms such as protozoa, bacteria, viruses or fungi (claimed).

ADVANTAGE - The process is a practical and reliable method for

controlling infectious diseases in fish and other aquatic lifeforms,
regardless of their developmental stage.

Dwg.1/2

Derwent Class: B04; C06; D16

International Patent Class (Main): A61K-039/40

International Patent Class (Additional): A61K-039/42; C07K-016/08;
C07K-016/12

13/7/30 (Item 3 from file: 351)

DIALOG(R) File 351:Derwent WPI

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003168479

WPI Acc No: 1981-29021D/198116

Vaccine contg. ciliary protein from *Tetrahymena pyriformis* - for
immunising fish against *ichthyophthirius multifiliis* etc.

Patent Assignee: RESEARCH CORP (RESE)

Inventor: DAWE D L; GOVEN B A; GRATZEK J B

Number of Countries: 005 Number of Patents: 007

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 8100812	A	19810402				198116 B
EP 38337	A	19811028	EP 80902005	A	19800922	198145
JP 56501130	W	19810813				198151
US 4309416	A	19820105				198204
EP 38337	B	19840613				198425
DE 3068224	G	19840719				198430
JP 89031489	B	19890626				198929

Priority Applications (No Type Date): US 7977269 A 19790920

Cited Patents: 5.Jnl.Ref; US 4009259

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
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WO 8100812	A	E			
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Designated States (National): JP

Designated States (Regional): DE FR GB

EP 38337	A	E			
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Designated States (Regional): DE FR GB

EP 38337	B	E			
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Designated States (Regional): DE FR GB

Abstract (Basic): WO 8100812 A

Veterinary vaccine for immunising fish comprises a ciliary protein
derived from *Tetrahymena pyriformis* cilia and an inert solvent..

The vaccine immunises fish against *Ichthyophthirius*
multifiliis and *Cryptocaryon irritans*, which are holotrichous ciliates
ectoparasitic on the gill and hypodermis of fish.

These parasites cause severe epizootics in the culture of food fish
and ornamental fish, esp. in high density ponds, and normal chemical
treatments are ineffective in removing the encysted stage

Derwent Class: B04; C03; D16

International Patent Class (Additional): A61K-035/68; A61K-039/00

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